REMARKS

Claims 1-21 are pending in the application and stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,006,593 to Yamanaka, in view of Weling (U.S. Patent No. 5,757,502) and in view of Mizutani (U.S. Patent No. 6,304,319). Applicants respectfully traverse the rejections.

At the very minimum, independent claims 1, 9 and 16 are believed to be patentably distinct and patentable over the combination of Yamanaka, Weling and Mizutani because such combination does not disclose or suggest *scanning a semiconductor wafer with an atomic force microscope to determine a position of an* ***alignment feature*** *based on the elasticity difference between the* ***alignment feature*** *and the material surrounding the feature, wherein the determined position of the alignment feature is used for alignment,* as essentially claimed in claims 1, 9 and 16.

Indeed, although Yamanaka discloses using acoustic energy for material and defect inspections of VLSI wafers (col. 8, lines 9-13), there is nothing in Yamanaka that discloses or suggest using atomic force microscopes to determine positions of alignment features on the wafer for purposes of alignment in semiconductor fabrication. Indeed, even Examiner acknowledges (on page 3 of the Final Office Action) that Yamanaka does not disclose aligning the feature with a feature on a mask.

However, neither Weling nor Mizutani cures the deficiencies of Yamanaka in that regard. Indeed, although Mizutani arguably discloses the use of AFM to detect the position of an alignment mark to measure the deviation from the position as measure by an optical system, there is nothing in Mizutani that teaches the use of *acoustic AFM*, much less using an alignment

feature (not alignment mark) having a different elasticity from the surrounding material, which can be measured via acoustic stress applied to the wafer.

Indeed, Mizutani merely discloses (in Col. 10, lines 46-50) using AFM. However, those of ordinary skill in the art readily understand that there are various modes of using AFM, such as determining depressions or bumps in a surface by measuring the up and down movements of a probe tip via a laser light as the probe tip scans the wafer. There is nothing in Mizutani that even references acoustic AFM. Thus, it is respectfully submitted that other than through selective combination via impermissible hindsight reasoning, Examiner has not provided sufficient motivation for combining the teachings of the above-cited references to derive the claimed inventions.

Furthermore, with respect to claim 9, although Yamanaka discloses applying vibrations to an AFM cantilever tip, there is nothing in Yamanaka or the other cited references that discloses or remotely suggests an alignment system having an *acoustic source that directs and acoustic beam on the surface of the wafer to apply stress to the wafer*, as claimed in claim 9.

Therefore, for at least the above reasons, claims 1, 9 and 16 are believed to be patentable and nonobvious over the combination of Yamanaka, Weling and Mizutani . In addition, all claims depending from claims 1, 9 and 16 are believed to be patentable over such combination at least by virtue of their dependence from respective base claims 1, 9 and 16.

Accordingly, withdrawal of the rejections under 35 U.S.C. 103 is respectfully requested.

Respectfully submitted,

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